

FORTY YEARS OF SPRING MIGRATION IN SOUTHERN CONNECTICUT

BY ARETAS A. SAUNDERS

FOR many years it has been my habit to rise early on spring mornings, and spend the early hours keeping track of the bird migration. In earlier years this was in the vicinity of New Haven, Connecticut. Later it was in Norwalk, and finally in Fairfield. All of these are about the same latitude along the coast. Observations first began in 1902 but are rather incomplete in the earlier years. From 1908 to 1913 I was elsewhere, but from 1914 to 1949 the records are quite complete.

I will not assert that I always found each species on the day its first individuals arrived. I know that in some cases I did not, for others informed me, at times, that they had found certain species a day or two before I did. I have used some of these earlier dates whenever I was sure that they were reliable. For example, Mr. Frank Novak, warden of the Birdcraft Sanctuary in Fairfield, frequently found the first House Wren a day or two before I did.

In finding birds I frequently used my knowledge of bird songs. It is much easier to hear a bird sing, and identify it by the song than it is to get a clear view of it in just the right light to identify it. I do not mean, however, that I relied on song in all cases. The Veery, for example, usually arrives several days before it begins to sing. If a song was unrecognizable, or that of a rare species, I made it a practice to see the bird.

In general, when a species arrives its numbers begin to increase, and it is soon common. Occasionally a single individual arrives long before the rest of its species. I found this true on two occasions with the White-eyed Vireo, and once with the Indigo Bunting. In each case it was many days before another individual appeared. Both are birds that arrive in May, and in each case the early individuals arrived in April.

My data on the arrivals of shore and water birds are not as complete, largely because such birds were scarce in the earlier days. When the Migratory Bird Treaty Act (1916) was put into effect, and the shore birds were all protected, the increase in these species was remarkable. The case of the Laughing Gull illustrates this. When a species is common, its migration dates are likely to be earlier than when it is scarce. This gull was very rare when "The Birds of Connecticut" (Sage and Bishop, 1913) was published. I saw my first one in 1916. By 1919 I began recording its arrival in spring migration. For the first 11 years thereafter its date of arrival averaged between May 6 and 7. For the entire period, 1919 to 1949, it averaged about April 26. But for the last 16 years the average was between April 16 and 17. These last years are probably more nearly the correct time.

The two species of orioles also indicate the extent to which the abundance of a species produces earlier dates. The Baltimore Oriole is exceedingly common, but the Orchard Oriole rather uncommon. In certain years I have found both species arriving on the same day, but the average arrival of the Baltimore Oriole is about May 5, whereas that of the Orchard Oriole is between May 9 and 10.

I have listed in Tables 1-3 all of the species that I am including in this paper. They are divided into lists of arrivals of summer residents; departures of winter visitors; and arrivals and departures of transient species. In each case the earliest, latest and average dates are given. This does not include all of the birds observed through the period, for there are resident species that do not migrate, and many species too rare to give definite dates on migration.

One of the interesting things about this study is the difference between different years, some being early, others late, and still others about average. In order to study these years and compare them I have selected 50 common summer resident species and arranged them in order of their average dates of arrival, from the Common Grackle in early March, to the Yellow-billed Cuckoo in the latter part of May (Table 4).

When one has a series of dates of arrival of any given species and adds them up and determines the average date of arrival, that date is likely to be a fraction. It would be incongruous to speak of the average date of arrival of the Yellow Warbler, for example, as May 1.52. All averages were calculated to two decimal places, however, to determine the order of listing of species (Table 4), especially of those whose average arrivals were on the same day. However, each fractional amount was "rounded-off" to the nearest date for Tables 1-4.

There is not a species whose average arrival is in March, that has not been known to occur, sometimes, in the winter. There is usually, however, some means of indicating the difference between migrating birds and wintering ones. Wintering birds generally occur in certain localities, but migrating ones are likely to be in new places. It is because of the lack of anything definite to distinguish winter birds from migrants that I left the Song Sparrow out of Table 4. Numbers of the birds spend the winter, but they are likely to sing in January or February, before migration begins; and while there are indications of migration early in March, I did not feel too sure of the dates.

From the data on average arrivals I have constructed diagrams, plotting the species horizontally, and the dates of arrivals vertically, the earlier dates at the bottom. Thus, the 50 species make a line that gradually rises from left to right.

Then, plotting the actual dates of arrival for any one year forms a very irregular line. Early dates come below the line of average arrivals, and late dates above it. I have thus made diagrams for all of the years for which I have

records, and I am using four of these as illustrations (Figs. 1-4). The four selected are 1938, 1940, 1917 and 1923. 1938 (Fig. 1) is the year of earliest arrivals in my records. 1940 (Fig. 2) is the most uniformly late year. 1917 (Fig. 3) is an unusual year, actually latest in total figures, but not uniformly so, and 1923 (Fig. 4) is nearest the calculated average.

For each year I determined the number of days and fractions of days that each species was early or late, added the late dates and the early dates, subtracted the smaller result from the larger, which determined whether the year was early or late, and divided the result by 50, which gave me the average number of days or fractions of a day that the species were early or late.

By this means I determined that the 50 species averaged 6.15 days early in 1938 and 3.55 days late in 1940. In 1923 they were 0.20 days early, and in the erratic year of 1917 they averaged 5.38 days late.

The year 1917 was a most remarkable one. In March and April the first 19 species of the 50 summer residents averaged a little less than 1 day late, but the remaining 31 species that had average arrivals in May were 7.98 days late. The weather in the early days of May was cold, raw and more or less rainy. I searched for birds at a time when one normally expects them to be arriving in numbers. On May 3 I found one American Redstart, but not another till May 15. On May 5 there was one Catbird and one Ovenbird. A Bobolink appeared on May 9, and a Veery on May 10. Then, on May 12, birds began appearing in numbers. From then until the 19th birds were everywhere. They were mostly warblers and thrushes and were down low in the shrubbery but were easily seen. Transient species were even later than the summer residents. Ruby-crowned Kinglets were present till May 18. Parula, Magnolia, Blackburnian and Bay-breasted Warblers remained till June 2, Tennessee Warblers till June 9, and Blackpoll Warblers to June 10. I have previously published something about the relation of these birds to tent caterpillars in this particular spring (1920. *Auk*, 37:312).

In the springs of 1923 and 1924 the arrival dates came close to the average. Actually, 1924 figured closer to the average, but the figures, species by species, were more erratic than 1923.

I hoped that the figures obtained would give some data on cycles of early and late years. While they did not show anything very definite, they did show that there were more late years in the early part of the period, and early years in the latter part. In the period from 1902 to 1934, the years for which I have records averaged 0.99 days late. From 1935 to 1949, the years averaged 1.48 days early. There were 15 late years and seven early ones in the first period, and three late ones and 12 early ones in the second period.

I thought that there might be some correlation between bird migrations and the growth of trees. I knew of only one tree that had been cut at a date that

was definite. A large white oak, that I had passed by many times, was cut down in the fall of 1956. When I examined its stump the outer rings were so small that I needed a lens to count them. There was one ring definitely wider than the others, and counting back from the outermost ring that ring proved to be 1938. But in the rings earlier than that I could find nothing definite.

TABLE I
ARRIVALS OF SUMMER RESIDENTS

Species	No. of Years	Average	Earliest	Latest
Green Heron (<i>Butorides virescens</i>)	34	Apr. 27	Apr. 15, 1920	May 8, 1931
Black-crowned Night Heron (<i>Nycticorax nycticorax</i>)	34	Apr. 10	Mar. 25, 1945	Apr. 24, 1935
Wood Duck (<i>Aix sponsa</i>)	14	Mar. 25	Feb. 28, 1946	Apr. 25, 1925
Broad-winged Hawk (<i>Buteo platypterus</i>)	15	May 1	Apr. 17, 1925	May 16, 1947
Clapper Rail (<i>Rallus longirostris</i>)	19	May 15	May 2, 1930	May 28, 1922
Killdeer (<i>Charadrius vociferus</i>)	34	Mar. 23	Mar. 13, 1938	Apr. 3, 1940
Spotted Sandpiper (<i>Actitis macularia</i>)	40	May 2	Apr. 25, 1916	May 14, 1924
Mourning Dove (<i>Zenaidura macroura</i>)	30	Mar. 18	Feb. 19, 1944	Apr. 6, 1924
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	28	May 18	May 7, 1949	June 1, 1920
Black-billed Cuckoo (<i>Coccyzus erythrophthalmus</i>)	30	May 13	May 1, 1928	May 31, 1921
Whip-poor-will (<i>Caprimulgus vociferus</i>)	10	Apr. 28	Apr. 22, 1914	May 6, 1931
Common Nighthawk (<i>Chordeiles minor</i>)	33	May 15	May 5, 1919	May 27, 1927
Chimney Swift (<i>Chaetura pelagica</i>)	39	Apr. 28	Apr. 12, 1947	May 6, 1931
Ruby-throated Hummingbird (<i>Archilochus colubris</i>)	29	May 15	May 3, 1938	May 26, 1929
Belted Kingfisher (<i>Megaceryle alcyon</i>)	34	Mar. 23	Mar. 13, 1938	Apr. 3, 1940
Yellow-shafted Flicker (<i>Colaptes auratus</i>)	37	Mar. 25	Mar. 12, 1919	Apr. 7, 1940
Eastern Kingbird (<i>Tyrannus tyrannus</i>)	40	May 7	Apr. 30, 1940	May 18, 1917
Great Crested Flycatcher (<i>Myiarchus crinitus</i>)	35	May 9	Apr. 30, 1933	May 22, 1931
Eastern Phoebe (<i>Sayornis phoebe</i>)	40	Mar. 24	Mar. 12, 1921	Apr. 8, 1946
Least Flycatcher (<i>Empidonax minimus</i>)	35	May 2	Apr. 27, 1915	May 12, 1917
Eastern Wood Pewee (<i>Contopus virens</i>)	39	May 18	May 12, 1937	June 2, 1906
Rough-winged Swallow (<i>Stelgidopteryx ruficollis</i>)	30	Apr. 22	Apr. 3, 1938	May 10, 1917
Barn Swallow (<i>Hirundo rustica</i>)	40	Apr. 18	Apr. 3, 1938	Apr. 28, 1945
Purple Martin (<i>Progne subis</i>)	13	Apr. 28	Apr. 3, 1938	May 5, 1932
Fish Crow (<i>Corvus ossifragus</i>)	36	Mar. 26	Mar. 5, 1921	Apr. 9, 1940
House Wren (<i>Troglodytes aedon</i>)	39	Apr. 25	Apr. 16, 1922	May 4, 1940
Long-billed Marsh Wren (<i>Telmatodytes palustris</i>)	21	May 18	Apr. 30, 1941	May 26, 1945
Catbird (<i>Dumetella carolinensis</i>)	40	May 2	Apr. 25, 1921	May 6, 1931

TABLE 1 (Continued)

Species	No. of Years	Average	Earliest	Latest
Brown Thrasher (<i>Toxostoma rufum</i>)	40	Apr. 22	Apr. 7, 1929	May 4, 1940
Robin (<i>Turdus migratorius</i>)	40	Mar. 10	Feb. 20, 1946	Mar. 22, 1926
Wood Thrush (<i>Hylocichla mustelina</i>)	40	May 2	Apr. 27, 1939	May 13, 1917
Veery (<i>Hylocichla fuscescens</i>)	40	May 6	Apr. 30, 1933	May 15, 1920
Eastern Bluebird (<i>Sialia sialis</i>)	40	Mar. 9	Feb. 22, 1939	Mar. 23, 1928
White-eyed Vireo (<i>Vireo griseus</i>)	35	May 7	Apr. 23, 1938	May 19, 1917
Yellow-throated Vireo (<i>Vireo flavifrons</i>)	35	May 6	Apr. 30, 1938	May 17, 1917
Red-eyed Vireo (<i>Vireo olivaceus</i>)	40	May 11	May 2, 1906	May 19, 1917
Warbling Vireo (<i>Vireo gilvus</i>)	35	May 9	May 1, 1938	May 22, 1948
Black-and-white Warbler (<i>Mniotilta varia</i>)	36	Apr. 25	Apr. 18, 1936	Apr. 30, 1922
Worm-eating Warbler (<i>Helmitheros vernivorus</i>)	33	May 12	May 4, 1944	May 22, 1948
Blue-winged Warbler (<i>Vermivora pinus</i>)	40	May 4	Apr. 28, 1945	May 13, 1917
Yellow Warbler (<i>Dendroica petechia</i>)	40	May 2	Apr. 26, 1929	May 15, 1917
Black-throated Green Warbler (<i>Dendroica virens</i>)	38	Apr. 30	Apr. 24, 1922	May 11, 1917
Chestnut-sided Warbler (<i>Dendroica pensylvanica</i>)	39	May 5	Apr. 28, 1938	May 17, 1917
Prairie Warbler (<i>Dendroica discolor</i>)	38	May 4	Apr. 27, 1938	May 18, 1917
Ovenbird (<i>Seiurus aurocapillus</i>)	40	May 2	Apr. 27, 1945	May 7, 1920
Louisiana Waterthrush (<i>Seiurus motacilla</i>)	35	Apr. 18	Apr. 6, 1928	Apr. 25, 1924
Yellowthroat (<i>Geothlypis trichas</i>)	38	May 4	Apr. 28, 1938	May 16, 1937
Yellow-breasted Chat (<i>Icteria virens</i>)	37	May 9	May 3, 1929	May 18, 1917
Hooded Warbler (<i>Wilsonia citrina</i>)	32	May 8	May 1, 1938	May 22, 1948
American Redstart (<i>Setophaga ruticilla</i>)	38	May 3	Apr. 30, 1938	May 15, 1948
Bobolink (<i>Dolichonyx oryzivorus</i>)	31	May 6	Apr. 28, 1935	May 10, 1925
Eastern Meadowlark (<i>Sturnella magna</i>)	37	Mar. 21	Mar. 9, 1922	Mar. 31, 1940
Redwinged Blackbird (<i>Agelaius phoeniceus</i>)	40	Mar. 9	Feb. 19, 1939	Mar. 25, 1920
Orchard Oriole (<i>Icterus spurius</i>)	35	May 10	Apr. 30, 1938	May 22, 1947
Baltimore Oriole (<i>Icterus galbula</i>)	40	May 5	Apr. 30, 1938	May 12, 1917
Common Grackle (<i>Quiscalus quiscula</i>)	40	Mar. 8	Feb. 24, 1925	Mar. 26, 1916
Brown-headed Cowbird (<i>Molothrus ater</i>)	40	Mar. 26	Mar. 13, 1946	Apr. 7, 1947
Scarlet Tanager (<i>Piranga olivacea</i>)	40	May 8	Apr. 30, 1938	May 19, 1917
Rose-breasted Grosbeak (<i>Pheucticus ludovicianus</i>)	40	May 5	Apr. 30, 1935	May 15, 1917
Indigo Bunting (<i>Passerina cyanea</i>)	39	May 15	Apr. 22, 1941	May 23, 1917
Rufous-sided Towhee (<i>Pipilo erythrophthalmus</i>)	40	Apr. 19	Apr. 8, 1915	Apr. 29, 1937
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	27	May 4	Apr. 28, 1925	May 16, 1931
Henslow's Sparrow (<i>Passerherbulus henslowii</i>)	7	May 5	Apr. 28, 1941	May 9, 1936

TABLE 1 (Continued)

Species	No. of Years	Average	Earliest	Latest
Sharp-tailed Sparrow (<i>Ammospiza caudacuta</i>)	30	May 20	May 8, 1938	May 29, 1930
Seaside Sparrow (<i>Ammospiza maritima</i>)	31	May 17	May 4, 1938	May 30, 1931
Vesper Sparrow (<i>Pooecetes gramineus</i>)	40	Apr. 1	Mar. 15, 1920	Apr. 15, 1940
Chipping Sparrow (<i>Spizella passerina</i>)	38	Apr. 13	Apr. 1, 1945	Apr. 21, 1932
Field Sparrow (<i>Spizella pusilla</i>)	39	Mar. 27	Mar. 16, 1929	Apr. 6, 1934
Song Sparrow (<i>Melospiza melodia</i>)	36	Mar. 6	Feb. 25, 1930	Mar. 17, 1934

TABLE 2
DEPARTURES OF WINTER VISITORS

Species	No. of Years	Average	Earliest	Latest
Horned Grebe (<i>Podiceps auritus</i>)	20	Apr. 24	Apr. 15, 1924	May 15, 1933
Greater Scaup (<i>Aythya marila</i>)	23	Apr. 18	Mar. 30, 1935	May 12, 1917
Common Goldeneye (<i>Bucephala clangula</i>)	33	Apr. 9	Mar. 12, 1927	May 18, 1940
Bufflehead (<i>Bucephala albeola</i>)	21	Apr. 19	Mar. 10, 1928	May 12, 1917
Oldsquaw (<i>Clangula hyemalis</i>)	32	May 11	Apr. 17, 1918	May 30, 1941
White-winged Scoter (<i>Melanitta deglandi</i>)	27	May 18	Apr. 5, 1924	June 1, 1936
Surf Scoter (<i>Melanitta perspicillata</i>)	17	Apr. 29	Apr. 10, 1937	May 26, 1922
Common Merganser (<i>Mergus merganser</i>)	21	Apr. 10	Apr. 2, 1921	May 3, 1947
Red-breasted Merganser (<i>Mergus serrator</i>)	22	May 11	Apr. 15, 1928	May 13, 1919
Purple Sandpiper (<i>Erolia maritima</i>)	6	May 9	Apr. 3, 1938	June 5, 1943
Great Black-backed Gull (<i>Larus marinus</i>)	18	Apr. 13	Mar. 18, 1931	May 4, 1947
Horned Lark (<i>Eremophila alpestris</i>)	14	Mar. 19	Feb. 27, 1943	Apr. 8, 1939
Red-breasted Nuthatch (<i>Sitta canadensis</i>)	9	Apr. 14	Mar. 25, 1949	May 7, 1932
Brown Creeper (<i>Certhia familiaris</i>)	28	Apr. 22	Apr. 6, 1929	May 19, 1917
Golden-crowned Kinglet (<i>Regulus satrapa</i>)	22	Apr. 23	Apr. 3, 1921	May 16, 1917
Myrtle Warbler (<i>Dendroica coronata</i>)	35	May 18	May 7, 1918	May 28, 1927
Slate-colored Junco (<i>Junco hyemalis</i>)	40	Apr. 29	Apr. 19, 1915	May 17, 1917
Tree Sparrow (<i>Spizella arborea</i>)	37	Apr. 2	Mar. 12, 1918	Apr. 25, 1940
Snow Bunting (<i>Plectrophenax nivalis</i>)	13	Feb. 25	Feb. 12, 1937	Mar. 10, 1934

TABLE 3
ARRIVALS AND DEPARTURES OF TRANSIENTS

Species	No. of Years	Arrivals			Departures		
		Average	Earliest	Latest	Average	Earliest	Latest
Common Loon (<i>Gavia immer</i>)	27	Apr. 13	Mar. 28, 1936	Apr. 28, 1936	May 24	May 1, 1929	June 20, 1942
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	13	Apr. 3	Mar. 20, 1934	Apr. 19, 1917	Apr. 28	Apr. 15, 1940	May 12, 1928
Great Blue Heron (<i>Ardea herodias</i>)	25	Apr. 7	Mar. 12, 1949	Apr. 17, 1927	May 19	May 4, 1944	May 31, 1942
Canada Goose (<i>Branta canadensis</i>)	12	Mar. 31	Mar. 7, 1946	Apr. 17, 1918	May 13	May 1, 1941	June 5, 1938
Ring-necked Duck (<i>Aythya collaris</i>)	12	Mar. 16	Mar. 1, 1938	Apr. 3, 1942	Apr. 26	Apr. 11, 1942	May 3, 1939
Osprey (<i>Pandion haliaetus</i>)	27	Apr. 11	Mar. 25, 1944	Apr. 26, 1922	May 10	Apr. 30, 1938	May 28, 1927
Semipalmated Plover (<i>Charadrius semipalmatus</i>)	32	May 13	May 3, 1924	May 29, 1920	June 3	May 28, 1921	June 14, 1939
Black-bellied Plover (<i>Squatarola squatarola</i>)	25	May 15	Apr. 28, 1946	May 24, 1930	June 5	May 28, 1922	June 17, 1939
Ruddy Turnstone (<i>Arenaria interpres</i>)	33	May 21	May 8, 1938	May 30, 1925	June 5	May 29, 1926	June 16, 1939
Solitary Sandpiper (<i>Tringa solitaria</i>)	26	May 10	Apr. 29, 1905	May 18, 1936	May 17	May 14, 1906	May 27, 1917
Greater Yellowlegs (<i>Totanus melanoleucus</i>)	25	Apr. 23	Apr. 8, 1934	Apr. 30, 1947	June 2	May 20, 1921	June 13, 1946
Knot (<i>Calidris canutus</i>)	22	May 25	May 4, 1938	May 31, 1940	June 2	May 30, 1933	June 12, 1939
Least Sandpiper (<i>Erolia minutilla</i>)	35	May 12	May 2, 1941	May 22, 1943	June 1	May 27, 1924	June 15, 1946
Dunlin (<i>Erolia alpina</i>)	15	May 21	May 7, 1942	May 26, 1946	May 31	May 27, 1933	June 17, 1946
Short-billed Dowitcher (<i>Limnodromus griseus</i>)	18	May 21	May 4, 1938	May 27, 1942	May 29	May 22, 1937	June 6, 1931
Semipalmated Sandpiper (<i>Ereunetes pusillus</i>)	32	May 16	Apr. 30, 1928	May 25, 1943	June 11	June 1, 1918	June 20, 1939
Sanderling (<i>Crocethia alba</i>)	27	May 19	May 7, 1942	May 28, 1927	June 6	May 30, 1944	June 7, 1939
Laughing Gull (<i>Larus atricilla</i>)	24	Apr. 21	Apr. 9, 1938	May 2, 1932	—	—	—
Bonaparte's Gull (<i>Larus philadelphia</i>)	18	May 5	Apr. 4, 1948	May 19, 1921	May 27	May 22, 1948	June 13, 1927
Common Tern (<i>Sterna hirundo</i>)	28	May 14	May 5, 1932	May 25, 1925	June 3	May 26, 1924	June 13, 1931
Roseate Tern (<i>Sterna dougallii</i>)	17	May 14	May 5, 1932	May 26, 1949	May 28	May 21, 1939	June 21, 1936
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)	12	Apr. 11	Mar. 30, 1927	Apr. 19, 1923	Apr. 29	Apr. 20, 1923	May 13, 1917
Yellow-bellied Flycatcher (<i>Empidonax flaviventris</i>)	11	May 20	May 18, 1937	May 25, 1945	June 1	May 27, 1941	June 11, 1944
Tree Swallow (<i>Iridoprocne bicolor</i>)	35	Apr. 8	Mar. 24, 1921	Apr. 19, 1931	May 22	May 6, 1942	May 31, 1925
Bank Swallow (<i>Riparia riparia</i>)	14	May 3	Apr. 18, 1936	May 12, 1925	May 21	May 15, 1921	May 31, 1937
Cliff Swallow (<i>Petrochelidon pyrrhonota</i>)	12	May 1	Apr. 30, 1938	May 12, 1917	May 23	May 16, 1936	May 30, 1917
Winter Wren (<i>Troglodytes troglodytes</i>)	15	Mar. 29	Mar. 1, 1946	Apr. 10, 1943	Apr. 23	Apr. 17, 1927	May 5, 1928

Species	No. of Years	Arrivals			Departures		
		Average	Earliest	Latest	Average	Earliest	Latest
Hermit Thrush (<i>Hylocichla guttata</i>)	32	Apr. 14	Mar. 29, 1929	Apr. 30, 1928	Apr. 28	Apr. 20, 1938	May 19, 1917
Swainson's Thrush (<i>Hylocichla ustulata</i>)	34	May 13	May 2, 1914	May 23, 1924	May 22	May 18, 1918	May 31, 1936
Gray-cheeked Thrush (<i>Hylocichla minima</i>)	27	May 19	May 13, 1949	May 25, 1927	May 24	May 17, 1914	May 30, 1930
Ruby-crowned Kinglet (<i>Regulus calendula</i>)	36	Apr. 15	Mar. 29, 1924	Apr. 17, 1940	May 3	Apr. 27, 1949	May 19, 1917
Solitary Vireo (<i>Vireo solitarius</i>)	33	Apr. 25	Apr. 20, 1927	May 4, 1915	May 7	May 1, 1928	May 24, 1917
Tennessee Warbler (<i>Vermivora peregrina</i>)	30	May 17	May 8, 1927	May 23, 1935	May 25	May 17, 1922	June 9, 1917
Nashville Warbler (<i>Vermivora ruficapilla</i>)	34	May 6	Apr. 27, 1925	May 18, 1917	May 19	May 11, 1922	May 26, 1930
Parula Warbler (<i>Parula americana</i>)	38	May 5	Apr. 27, 1925	May 11, 1917	May 29	May 21, 1906	June 6, 1935
Magnolia Warbler (<i>Dendroica magna</i>)	36	May 10	May 5, 1914	May 17, 1917	May 26	May 11, 1918	June 2, 1917
Black-throated Blue Warbler (<i>Dendroica caerulescens</i>)	36	May 8	May 2, 1941	May 17, 1917	May 22	May 13, 1946	June 1, 1945
Blackburnian Warbler (<i>Dendroica fusca</i>)	36	May 14	May 2, 1914	May 24, 1932	May 24	May 14, 1919	June 2, 1917
Bay-breasted Warbler (<i>Dendroica castanea</i>)	27	May 19	May 7, 1932	May 25, 1931	May 24	May 14, 1919	June 2, 1917
Blackpoll Warbler (<i>Dendroica striata</i>)	38	May 14	May 7, 1938	May 19, 1917	June 5	May 29, 1914	June 13, 1927
Pine Warbler (<i>Dendroica pinus</i>)	30	Apr. 15	Apr. 1, 1921	Apr. 27, 1940	Apr. 23	Apr. 17, 1943	May 7, 1939
Palm Warbler (<i>Dendroica palmarum</i>)	36	Apr. 17	Apr. 3, 1938	May 2, 1934	May 1	Apr. 18, 1936	May 13, 1917
Northern Waterthrush (<i>Seiurus noveboracensis</i>)	38	May 7	Apr. 29, 1945	May 16, 1920	May 26	May 18, 1931	June 8, 1945
Mourning Warbler (<i>Oporornis philadelphia</i>)	14	May 25	May 21, 1932	May 27, 1914	June 4	May 29, 1943	June 10, 1928
Wilson's Warbler (<i>Wilsonia pusilla</i>)	33	May 17	May 8, 1914	May 24, 1939	May 23	May 17, 1914	June 10, 1927
Canada Warbler (<i>Wilsonia canadensis</i>)	38	May 12	May 9, 1943	May 24, 1917	May 30	May 21, 1914	June 10, 1945
Rusty Blackbird (<i>Euphagus carolinus</i>)	36	Mar. 21	Mar. 2, 1930	Apr. 10, 1948	Apr. 21	Apr. 1, 1919	May 15, 1917
Savannah Sparrow (<i>Passerculus sandwichensis</i>)	34	Apr. 9	Mar. 22, 1942	Apr. 23, 1930	Apr. 30	Apr. 24, 1927	May 9, 1936
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	12	May 13	May 8, 1932	May 19, 1941	May 17	May 13, 1934	May 20, 1941
White-throated Sparrow (<i>Zonotrichia albicollis</i>)	38	Apr. 9	Mar. 26, 1937	Apr. 23, 1918	May 16	May 6, 1918	May 29, 1917
Fox Sparrow (<i>Passerella iliaca</i>)	38	Mar. 12	Feb. 24, 1925	Apr. 2, 1927	Apr. 7	Mar. 26, 1948	Apr. 24, 1940
Swamp Sparrow (<i>Melospiza georgiana</i>)	34	Apr. 10	Mar. 22, 1942	Apr. 25, 1936	May 8	May 1, 1944	May 24, 1917

TABLE 4

FIFTY COMMON SUMMER RESIDENTS ARRANGED IN ORDER OF AVERAGE DATES OF ARRIVAL

Species	Average Arrivals	Dates			
		First Arrivals			
		1917	1923	1938	1940
1. Common Grackle	March 8	March 15	March 3	March 8	March 18
2. Redwinged Blackbird	March 9	March 15	March 17	Feb. 26	March 16
3. Eastern Bluebird	March 9	March 12	March 3	March 12	March 16
4. Robin	March 10	March 10	March 3	March 7	March 6
5. Eastern Phoebe	March 24	March 31	March 21	March 20	April 2
6. Yellow-shafted Flicker	March 25	March 25	March 22	March 20	April 7
7. Brown-headed Cowbird	March 26	March 22	March 30	March 20	April 2
8. Field Sparrow	March 27	March 24	April 4	March 20	April 2
9. Vesper Sparrow	April 1	March 31	March 27	April 2	April 5
10. Chipping Sparrow	April 13	April 1	April 8	April 12	April 17
11. Louisiana Waterthrush	April 18	April 22	April 21	April 12	April 16
12. Barn Swallow	April 18	April 20	April 22	April 3	April 6
13. Rufous-sided Towhee	April 19	April 21	April 17	April 2	April 25
14. Brown Thrasher	April 22	April 21	April 22	April 15	May 4
15. Rough-winged Swallow	April 22	May 10	April 21	April 3	April 27
16. House Wren	April 25	April 23	April 20	April 20	May 4
17. Black-and-white Warbler	April 25	April 21	April 27	April 19	April 19
18. Green Heron	April 27	April 22	April 21	April 24	April 27
19. Chimney Swift	April 28	April 21	April 29	April 24	May 1
20. Black-throated Green Warbler	April 30	May 11	April 27	April 28	May 4
21. Yellow Warbler	May 2	May 15	May 1	April 27	May 5
22. Catbird	May 2	May 5	April 30	April 29	May 5
23. Ovenbird	May 2	May 5	May 1	April 28	May 4
24. Spotted Sandpiper	May 2	April 28	April 28	April 29	May 10
25. Least Flycatcher	May 2	May 12	May 4	May 1	May 3
26. Wood Thrush	May 2	May 12	May 4	April 28	May 4
27. American Redstart	May 3	May 3	May 1	April 30	May 7
28. Prairie Warbler	May 4	May 18	May 4	April 27	May 11
29. Blue-winged Warbler	May 4	May 13	May 2	April 29	May 7
30. Yellowthroat	May 4	May 12	May 5	April 28	May 11
31. Baltimore Oriole	May 4	May 12	May 5	April 30	May 5
32. Chestnut-sided Warbler	May 5	May 17	May 4	April 28	May 7
33. Rose-breasted Grosbeak	May 5	May 15	May 4	May 2	May 10
34. Bobolink	May 6	May 9	May 5	May 1	May 8
35. Yellow-throated Vireo	May 6	May 17	May 5	April 30	May 4
36. Veery	May 6	May 10	May 10	May 7	May 6
37. Eastern Kingbird	May 7	May 18	May 5	May 2	May 7
38. White-eyed Vireo	May 7	May 19	May 7	April 23	May 6
39. Scarlet Tanager	May 8	May 19	May 8	April 30	May 10
40. Hooded Warbler	May 8	May 26	May 5	May 1	May 11

TABLE 4 (Continued)

Species	Dates									
	Average Arrivals		First Arrivals							
			1917		1923		1938		1940	
41. Great Crested Flycatcher	May	9	May	19	May	9	May	3	May	11
42. Yellow-breasted Chat	May	9	May	18	May	12	May	4	May	16
43. Orchard Oriole	May	10	May	16	May	12	April	30	May	11
44. Red-eyed Vireo	May	11	May	19	May	13	May	4	May	7
45. Black-billed Cuckoo	May	13	May	18	May	12	May	5	May	26
46. Indigo Bunting	May	15	May	23	May	20	May	6	May	19
47. Common Nighthawk	May	15	May	25	May	7	May	6	May	8
48. Ruby-throated Hummingbird	May	15	May	13	May	17	May	3	May	22
49. Eastern Wood Pewee	May	18	May	30	May	22	May	13	May	15
50. Yellow-billed Cuckoo	May	18	May	19	May	26	May	21	May	29

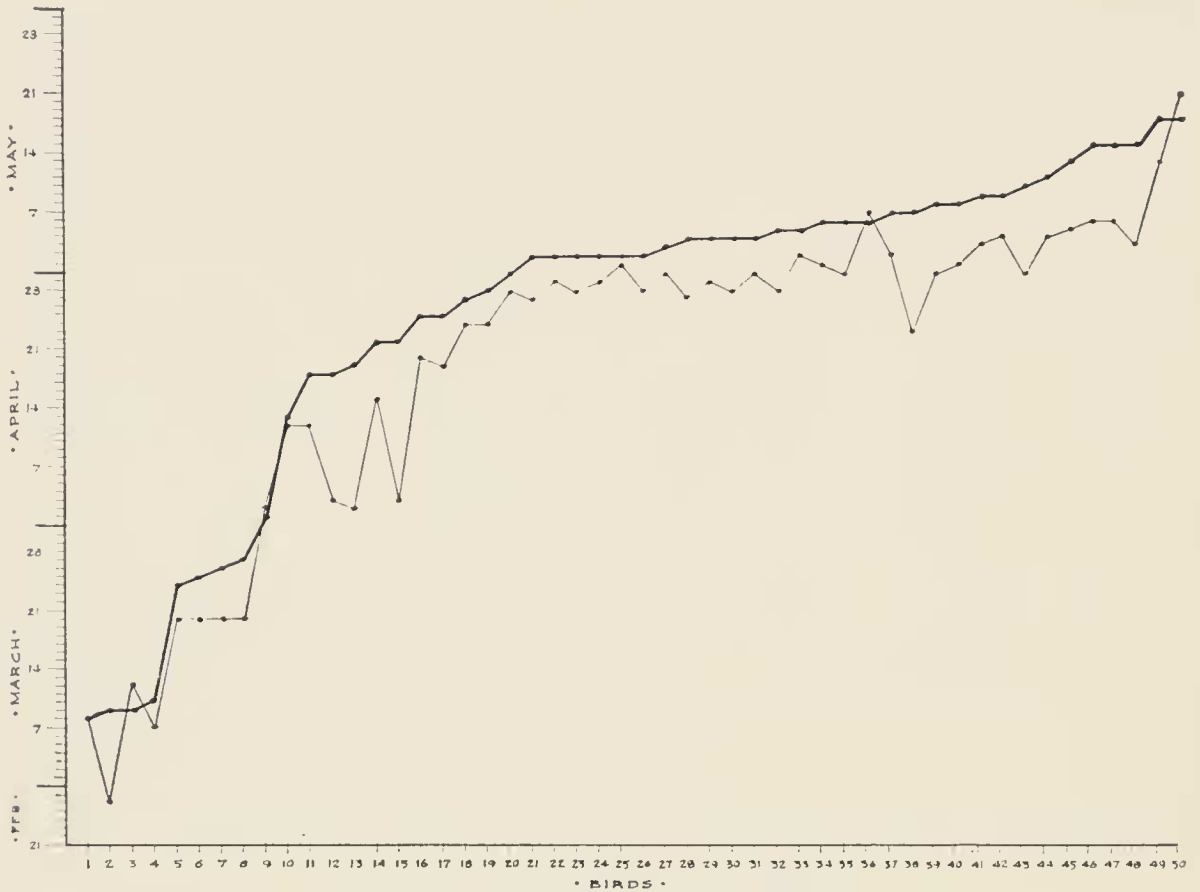


FIG. 1. Spring migration in 1938.¹



FIG. 2. Spring migration in 1940.

¹For Figs. 1-4, the numbers 1-50 represent the common summer residents listed in Table 4; the thin line designates dates of arrival for the particular year, the thick line the dates of average arrival (Table 4).

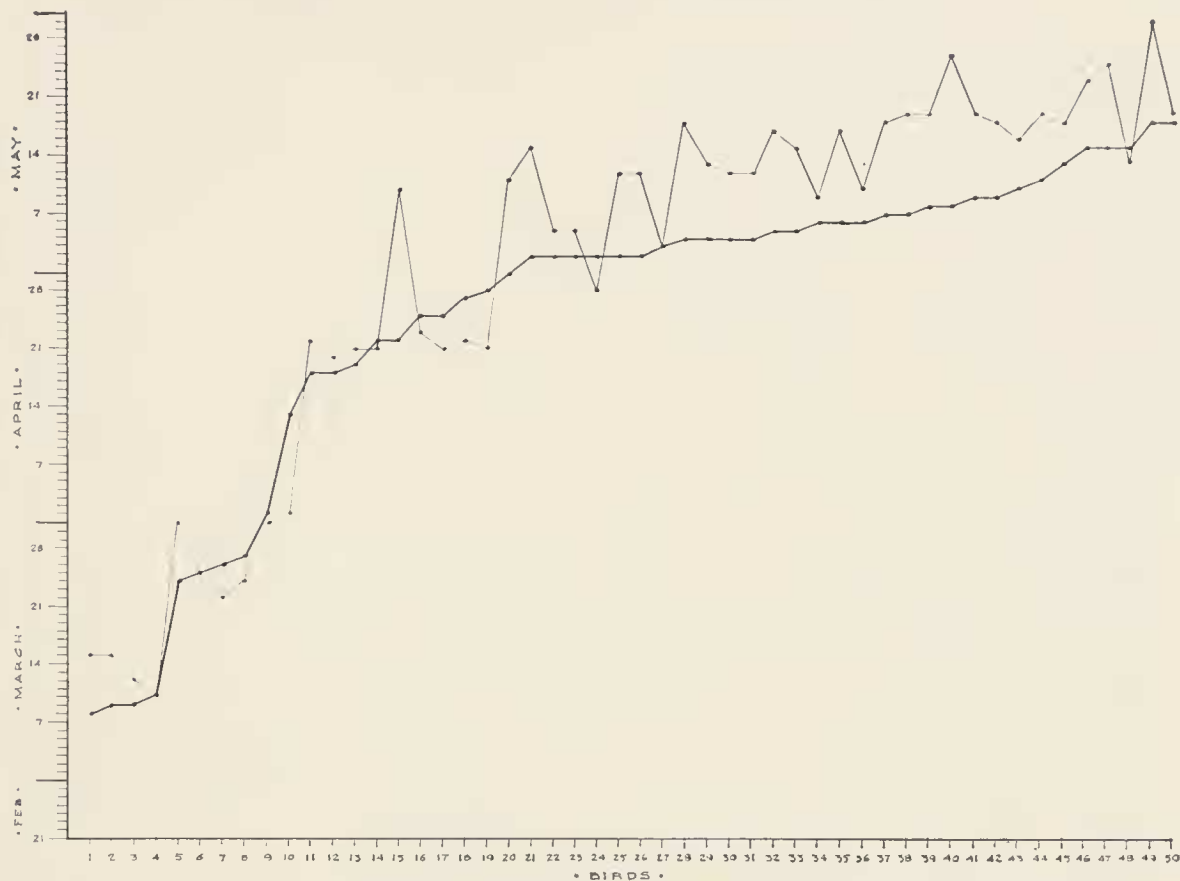


FIG. 3. Spring migration in 1917.

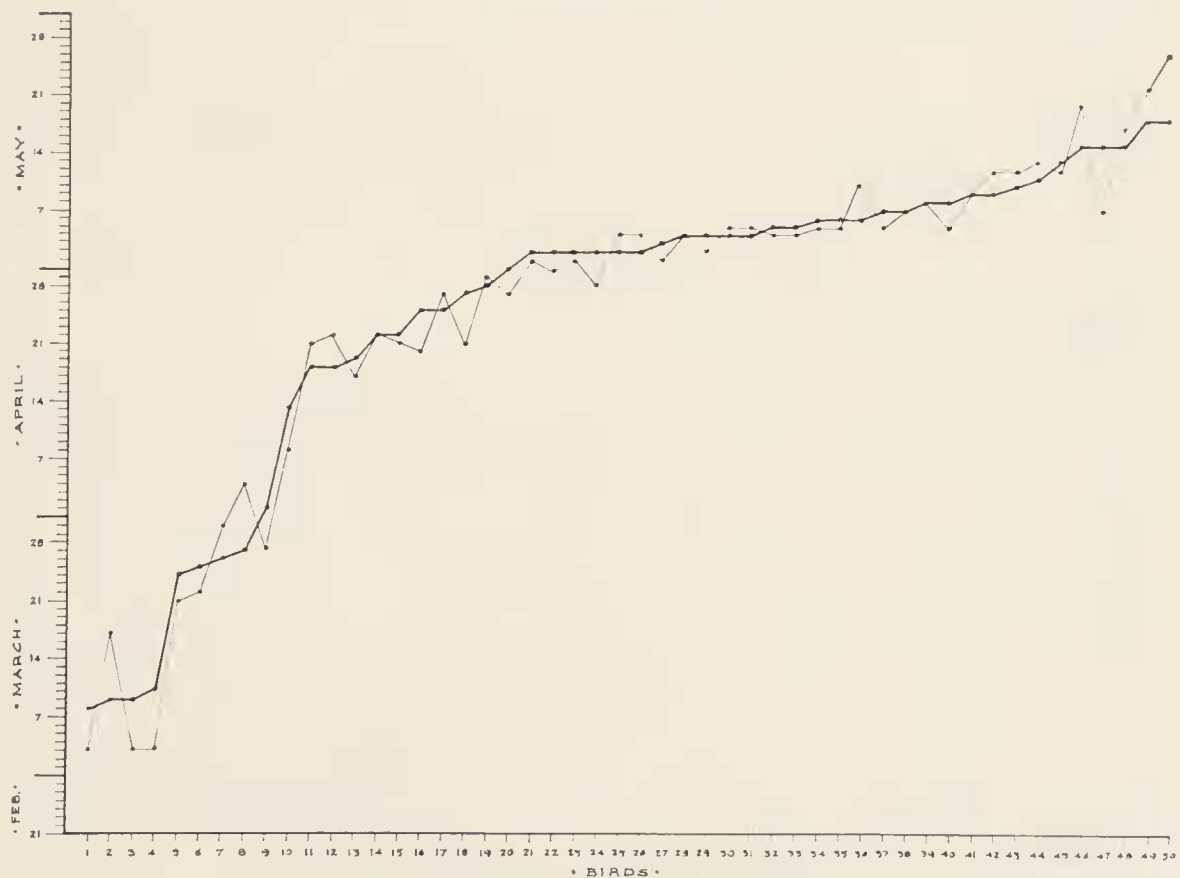


FIG. 4. Spring migration in 1923.